

## CLAIMS

What is claimed is:

1           1.       An authentication method comprising:  
2           generating an initialization vector at a first electronic device;  
3           determining at the first electronic device whether the initialization vector falls  
4           within a first group of initialization vectors, the first group includes a plurality of  
5           initialization vectors solely used in connection with an authentication sequence; and  
6           encrypting information using in part the initialization vector for return to a  
7           second electronic device if the initialization vector falls within the first group.

1           2.       The authentication method of claim 1, wherein the first electronic device  
2           is a wireless unit.

1           3.       The authentication method of claim 1, wherein the second electronic  
2           device is an access point.

1           4.       The authentication method of claim 1, wherein prior to generating the  
2           initialization vector, the method comprises receiving the information from the second  
3           electronic device by the first electronic device.

1           5.       The authentication method of claim 4, wherein the information is a  
2           challenge text.

1           6.       The authentication method of claim 5, wherein the challenge text is a  
2           first sequence of bits and the initialization vector is a second sequence of bits produced  
3           by a number generator.

1           7.       The authentication method of claim 4, wherein the number generator is a  
2           pseudo-random number generator.

1           8.       The authentication method of claim 1 further comprising regenerating an  
2           initialization vector if the initialization vector fails to fall within the first group.

1           9.     The authentication method of claim 1, wherein the determining whether  
2     the initialization vector falls within the first group includes determining whether a  
3     selected series of bits of the initialization vector has been set.

1           10.    The authentication method of claim 9, wherein the selected series of bits  
2     is continuous.

1           11.    The authentication method of claim 5, wherein prior to receiving the  
2     challenge text, the method further comprises negotiating a shared secret key between  
3     the first electronic device and the second electronic device.

1           12.    The authentication method of claim 11, wherein the encrypting of the  
2     information includes  
3         combining the initialization vector with the shared secret key; and  
4         repeatedly performing bitwise Exclusive-OR (XOR) operations on the challenge  
5     text using a combination of the initialization vector with the shared secret key.

1           13.    The authentication method of claim 5 further comprising:  
2         transmitting both the encrypted challenge text and the initialization vector to the  
3     second electronic device;  
4         decrypting the encrypted challenge text using both the initialization vector and a  
5     prestored copy of the shared secret key to recover a challenge text; and  
6         comparing the recovered challenge text with the challenge text.

1           14.    A method for authenticating a wireless unit in communications with an  
2     access point, comprising:  
3         transmitting a challenge text from the access point to the wireless unit;  
4         receiving an encrypted challenge text and an initialization vector from the  
5     wireless unit;  
6         decrypting the encrypted challenge text using both the initialization vector and a  
7     pre-stored copy of a shared secret key to recover a challenge text; and  
8         comparing the recovered challenge text with the challenge text previously  
9     transmitted to the wireless unit.

1 15. The method of claim 14, wherein the challenge text is a first sequence of  
2 bits.

1 16. The method of claim 15, wherein the initialization vector is a second  
2 sequence of bits produced by a number generator.

1 17. The method of claim 16, wherein the number generator is a pseudo-  
2 random number generator.

1 18. The method of claim 14, wherein prior to transmitting the challenge text,  
2 the method further comprises negotiating the shared secret key between the access  
3 point and the wireless unit.

1 19. The method of claim 14, wherein the decrypting of the encrypted  
2 challenge text includes  
3 combining the initialization vector with the shared secret key; and  
4 using a combination of the initialization vector and the shared secret key as a  
5 key material loaded to decrypt the encrypted challenge text.

1 20. A method comprising:  
2 selecting a bit size (N) of an initialization vector;  
3 partitioning all  $2^N$  initialization vectors into a first group and a second group;  
4 using an initialization vector from the first group exclusively for authentication;  
5 and  
6 using an initialization vector from the second group exclusively for data  
7 communications.

1 21. The method of claim 20, wherein the authentication is Wired Equivalent  
2 Privacy (WEP) authentication in accordance with Institute of Electrical and Electronics  
3 Engineers (IEEE) 802.11.

1 22. The method of claim 20, wherein a first predetermined number of  
2 initialization vectors associated with the first group is substantially less than a second  
3 predetermined number of initialization vectors associated with the second group.

003239.P065

1           23.    The method of claim 20, wherein the data communications include  
2           wired equivalent privacy (WEP) encryption and WEP decryption operations.

1           24.    An electronic device comprising:  
2           a memory to contain a plurality of keys including a shared secret key;  
3           a number generator;  
4           a device management logic in communication with the memory and the number  
5           generator, the device management logic including  
6           logic configured to analyze an initialization vector generated from the  
7           number generator to determine whether the initialization vector is used for either wired  
8           authentication or data communications; and  
9           a wireless transceiver to transmit and receive information for configured to  
10          support the authentication.

1           25.    The electronic device of claim 24, wherein the authentication is Wired  
2           Equivalent Privacy (WEP) authentication.

1           26.    The electronic device of claim 24 is an access point.

1           27.    An electronic device comprising:  
2           means for generating an initialization vector;  
3           means for determining whether the initialization vector falls within a first group  
4           of initialization vectors, the first group includes a plurality of initialization vectors  
5           solely used in connection with an authentication sequence; and  
6           means for encrypting information using the initialization vector for return to a  
7           source for the information using in part the initialization vector if the initialization  
8           vector falls within the first group.

1           28.    A software module implemented for execution by an electronic device,  
2           the software module comprising:  
3           a first module to select a bit size (N) of an initialization vector;  
4           a second module to partition all  $2^N$  initialization vectors into a first group and a  
5           second group;

- 6           a third module to use an initialization vector from the first group exclusively for  
7 authentication; and  
8           a fourth module to use an initialization vector from the second group  
9 exclusively for data communications.

003239.P065